

Brucella Vaccines for Bison and Elk: 2009

Steven Olsen, DVM, Ph.D. Dipl.
ACVM



What Can *Brucella* Vaccines Do?

- Prevent clinical effects (i.e. abortion)
- Reduce shedding and transmission
- Cannot prevent seroconversion

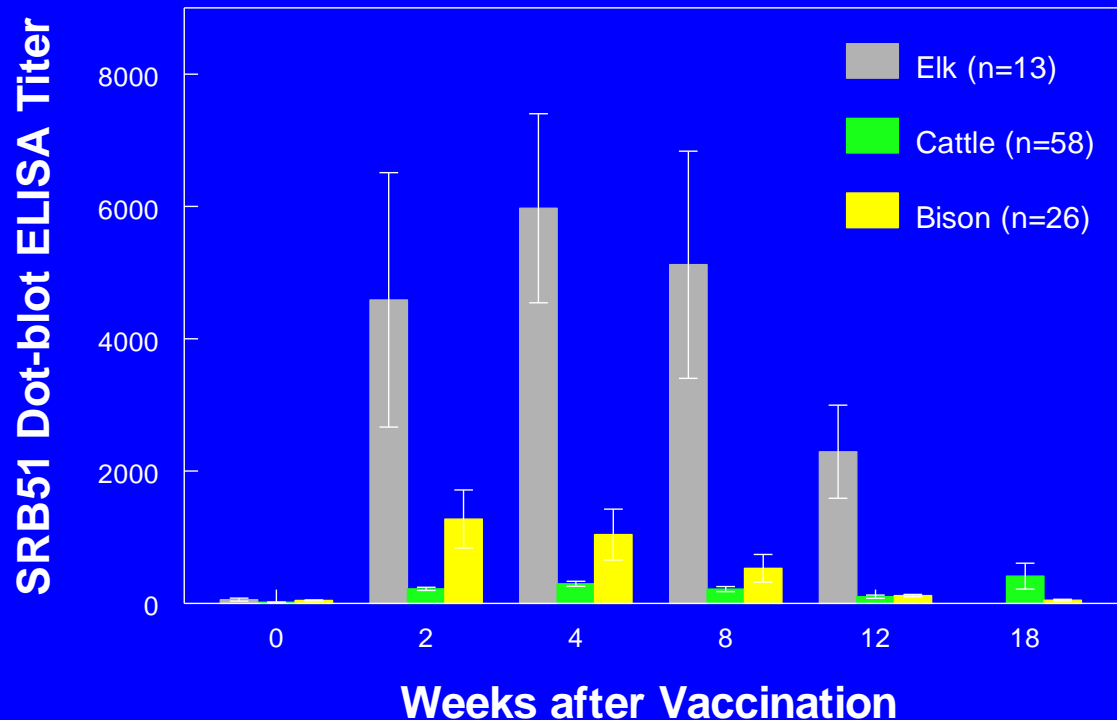
Questions Regarding *Brucella* Vaccines for GYA

- Can bison or elk be protected with a *Brucella* vaccine?
- Do we have any vaccine tools that could be beneficial?
- What direction is most promising for better vaccines?

Information Suggesting Bison Can Develop Protective Immunity

- Lack of abortion storms in chronically infected public or private bison herds
- Statistical differences between control and vaccinated bison in experimental studies

Species Comparison of Antibody Responses to *B. abortus* strain RB51



Variance in Immunologic Responses between Ruminants



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Comparing susceptibility to *Brucella* challenge

Species (Nonvaccinated)	N	Protection % protected (# aborted/infected / # challenged)		
		Abortion	Fetal/Mam. Infection	Maternal Infection
Cattle	46	54% (21/46)	54% (21/46)	39% (28/47)*
Bison	50	16% (42/50)	12% (44/50)	0% (50/50)

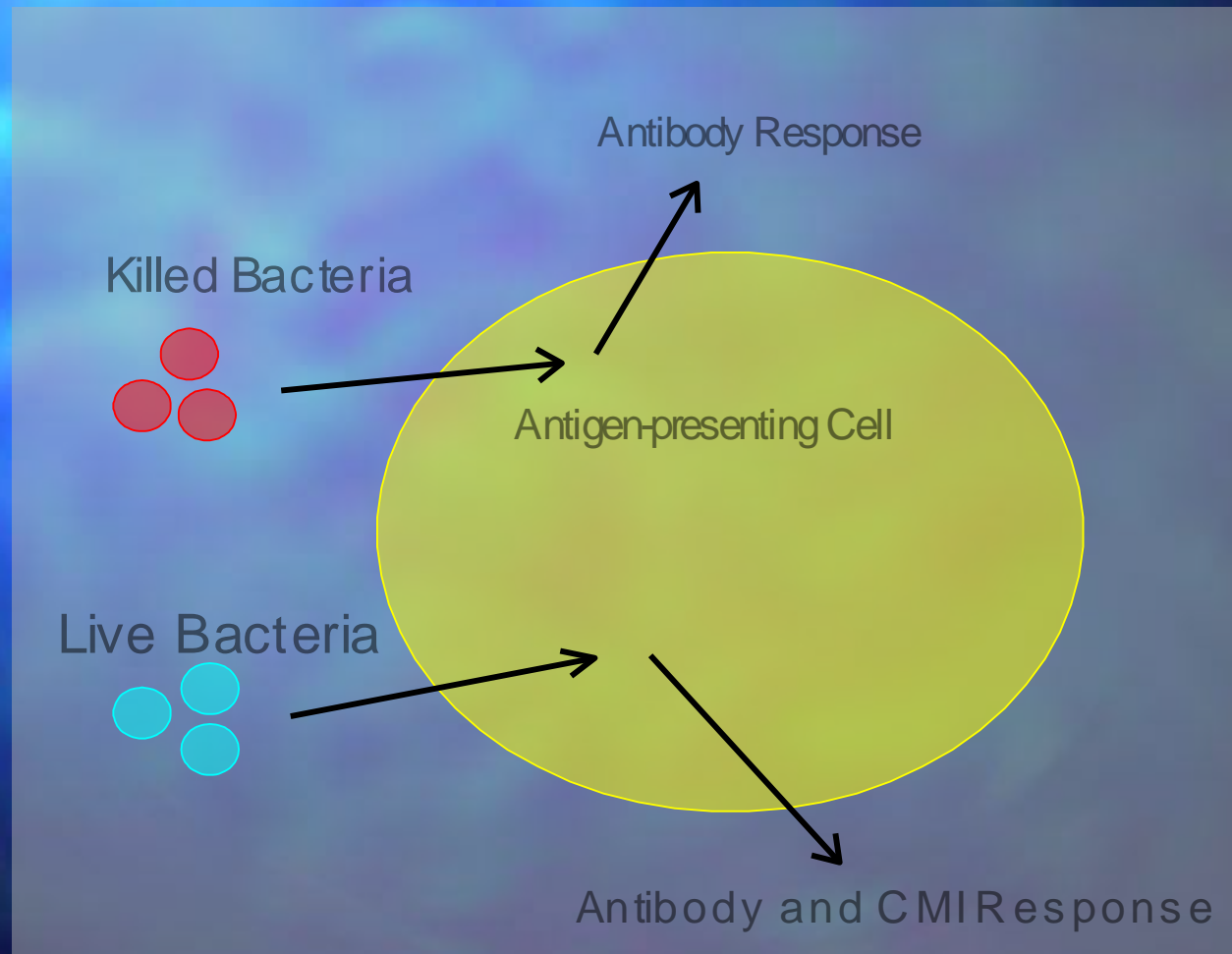


Other Vaccines

- Strain RB51 overexpressing SOD and wboA genes ("Super RB51")
 - cleared faster in vivo than parent
 - antibody and CMI responses not greater than parent
 - efficacy reduced compared to parent

What Direction for new vaccines?

- Better understanding of immune regulation/control in targeted species
- Better understanding of *Brucella* pathogenesis/survival mechanisms



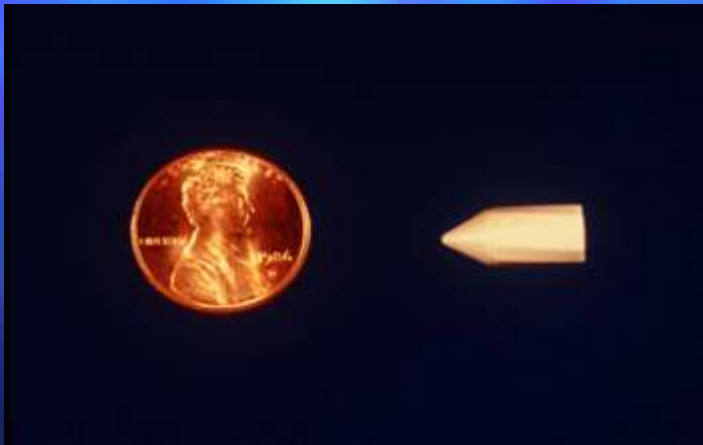
New Vaccines in Development

- New Recombinant strains which interact differently in the phagosome
- Proprietary adjuvants that induce CMI responses to killed bacteria in cattle



Delivery Options

- Ballistic Delivery



Conclusions

- We have efficacious vaccine/delivery tools currently available
- Progress on new vaccine candidates is continuing
- Likely that bison- and elk-specific vaccines will be required